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JUL 6 1958

Honorable Henry M. Jackson
Chairman, Military Applications Subcommittee
Joint Committee on Atomic Energy
United States Senate
Washington 25, D. C.

Dear Senator Jackson:

You will recall that during my briefing on 12 January the question arose as to the relative gains and losses of information by the US and the USSR delegations to the Geneva Conference. As reports of the Conference became available CIA has studied this problem and has compiled the attached report which we respectfully submit to you.

The entire transcript of the Subcommittee hearing has been reviewed and with the addition of the attached and the information forwarded to you on 9 February the transcript will, in my opinion, constitute an accurate and complete record.

Sincerely,

SIGNED

Allen W. Dulles
Director

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Attachment:
Evaluation Report

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Scientific Intelligence

Legislative Counsel

Deputy Director/
Intelligence

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At 8-4147

EVALUATION OF SOVIET GAINS IN NUCLEAR TECHNOLOGY

(Resulting from the International Conference on Peaceful Uses of Atomic Energy, at Geneva, August 8-20, 1955)

I. SCOPE

This report is written to provide information on inquiries made by members of the Joint Congressional Committee on Atomic Energy at the Executive Session attended by Mr. Allen Dulles, Dr. Herbert Seaville, Jr., [redacted], and [redacted] on 12 January 1956. An evaluation of the Geneva Conference on Peaceful Uses of Atomic Energy was requested from the standpoint of (a) how much the Soviets gained from the conference and from the United States and (b) which of the two countries benefited most.

II. SUMMARY

A. The world-wide scientific prestige of the USSR was enhanced by the demonstrated competence of its scientists and the fairly advanced state of its nuclear technology. The general lack of knowledge of their efforts and accomplishments prior to the Conference had resulted in reservations as to their claims of competency. Their contributions exceeded the level expected by most delegates.

B. The existing scientific prestige of the United States was promoted to even higher levels by US sponsorship and participation in the Conference. Foreign delegates and observers expected the US knowledge and accomplishments in nuclear technology to be outstanding. Our delegates and displays met, or exceeded, their expectations.

C. The information acquired by the United States at the conference confirmed previous intelligence estimates of probable Soviet competence in nuclear technology. Although no new significant scientific data were obtained from them, many details of intelligence value on specific Soviet accomplishments were revealed. Perhaps the most important benefit to the US nuclear energy program will result from the increased general appreciation that we face formidable competition from the USSR.

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D. The information gained by the Soviets at the conference as to technological information and knowledge of US engineering trends, both past and future, will undoubtedly benefit, to an unknown extent, their atomic energy program. Evaluations of various scientific fields are discussed in detail in the following sections.

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DISCUSSION

A. INTRODUCTION

1. Prestige

a. In the matter of world prestige, the excellence and quantity of US contributions confirmed this country's reputation for scientific competence among the technical people of the world. The United States, furthermore, made a lasting impression on the non-technical population by its liberal offers of assistance and technical aid, and its excellent and extensive scientific exhibits.

b. The USSR, by contrast, came to the conference as a scientific "dark horse." General knowledge of Soviet accomplishments in nuclear technology stemmed only from its published claims, official US announcements as to Soviet progress, and the assessment by free-world scientists of Soviet technical literature. At the conclusion of the Conference, the USSR was established in second place in over-all nuclear technology with the United Kingdom trailing only slightly behind.

2. Technological Benefits

a. Just how much the USSR derived from US technology at Geneva is difficult to assess accurately because: (1) The Soviet delegates gave evidence of previous familiarity with the published United States methodology and technical literature; (2) In some fields of endeavor the USSR gave evidence of a level of technology comparable to that of the United States. This was especially apparent in "hot" laboratory techniques, high energy physics and in certain branches of metallurgy and instrumentation; (3) There was unmistakable evidence of a Soviet policy to withhold information, publish old data, and even refuse to admit having made observations similar to those already published in the technical journals of the United States; (4) The Soviets did not reveal details of their future nuclear power program at Geneva, but the revelations since that date may have been sparked by the Geneva Conference.

b. The USSR representatives had a full appreciation of the basic scientific concepts involved in the discussions and frequently entered whole-heartedly in the question and answer sessions. They may have gained some advantages for their future planning from this participation by acquiring knowledge of the trends of engineering thought in the United States.

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c. In the fields of medicine, biology, and agriculture, the Soviet scientists gave evidence of close familiarity with American research. They presented very few new ideas in these areas, and the fact that some of the new ideas they did present may not be correct was pointed out in several instances by the delegates.

d. From the standpoint of technical "know-how" the United States gained very little from the USSR at the Conference. Perhaps the most important benefit to the United States from the Geneva Conference is the first hand knowledge by the delegates that they now face formidable competition from the USSR in nuclear technology.

3. Soviet Program

a. Soviet scientists appeared to be scientifically competent, to have great self-confidence, to be serious in their work, and to be well supported by their government. The USSR research program is ambitious and apparently well-planned on a broad basis.

b. Soviet scientists will now be able to compare still further the results of their research effort with a large quantity of published US data. It is expected that this comparison, and the evaluations therefrom, will contribute generally to the progress of their nuclear program by confirming research results and thus giving direction toward the most fruitful paths to pursue.

c. Soviet capabilities, as evaluated from the Conference, are consistent with previous intelligence estimates based on information from other sources. The information released by the USSR for the conference has added valuable details on specific Soviet achievements in applications of nuclear energy and has provided means for assessing some of their announced or suspected programs.

B. SUMMARY ANALYSIS BY SCIENTIFIC FIELDS

1. Reactor Physics and Technology

Evidence of original research, and the demonstrated competence of Soviet scientists, indicates that the USSR probably did not materially increase its potential competence in fundamental reactor physics and reactor theory through information gained at the Geneva Conference. The USSR research reactor development program may have been aided to a very limited extent. However, it is considered probable that USSR power reactor development program received substantial benefits from the excellent papers on power reactor design and development presented by the United States and other Western countries.

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2. Chemistry

a. The excellent quality and almost unlimited coverage of nuclear chemistry presented by the United States was certainly one of the outstanding features of the Conference. The USSR, on the other hand, did not present any aspect of industrial chemistry in their atomic energy program. No USSR contributions were made in the chemistry of thorium, recovery of uranium from ores, and problems of waste disposal. Work which was revealed by the USSR was considered old information. One paper was admitted to be essentially a confirmation of earlier US work as all the references used in the Soviet paper were from US publications.

b. A valid evaluation of the Soviet nuclear chemistry knowledge could not be based directly on the information they revealed at the Geneva Conference. Certain basic information to be considered, such as the operation of their present reactors, which require uranium ore separation and fuel processing, would obviously indicate that they must have a higher level of chemical competence than demonstrated. The chemical information presented by the United States at the conference will undoubtedly benefit the Soviet program, in that knowledge of certain techniques, processing data and equipment, and the detailed scope of some chemical problems could improve its efficiency.

3. Metallurgy

a. In the field of metallurgy the Soviet Union acquired little, if any, information from the United States. As in chemistry, there appeared to be an attempt by the Russian metallurgists to hold back evidence of advances in this area.

b. Viewed solely on the basis of Soviet performance at the Conference, Russian metallurgy presented a very non-uniform quality. However, the scientific papers on beryllium, thorium, and liquid metals and salts could be graded "average" to "good." The methods described in these papers are standard throughout the world. On the other hand, some of the effects of irradiation on properties of materials reported by the Russian metallurgists indicated marked originality.

4. Instrumentation

a. The Soviets presented very little information at Geneva pertaining to their instrumentation program. The Western nations' contributions dealt primarily with chemistry, radiography, and spectrography as applied to health, physics, medical techniques and industrial processes. Very little information dealing with reactor instrumentation or advanced research instrumentation was presented by any participant in the Conference.

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b. Since the Soviets presented so little material on nuclear instrumentation it is almost impossible to determine just what benefits they may have derived from the Conference. However, it is the consensus of the US delegates that the Soviets have reached a very advanced stage of development in the field of nuclear instrumentation and that their reactor, as presented, was adequately instrumented.

5. Medicine

a. It is believed that the amount of substantive data on medical aspects which was presented by the United States at the Conference and which was not previously known by the Soviets was small and unimportant.

6. Agriculture

In general, the US papers on agriculture were summaries of previously published works. Existing USSR papers, and those presented at the Conference, indicated their familiarity with the published US literature. It is doubtful whether any information new to the Soviets was given by the United States.

7. Scientific Exhibits

The United States had five exhibits, by contrast the Soviet Union had only one exhibit. Its models of reactors were not working models as was the case in the United States Atomic Energy Commission exhibit. The Soviet instruments shown, methods of using radioisotopes, medical applications, the color movie of the "first in the world" power reactor, and the large mineral collection purported to be uranium ores, drew much attention. However, from a technical standpoint, the quality of the single exhibit of the USSR did not approach the quality of the exhibits of the US Atomic Energy Commission.

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5 July 1956

MEMORANDUM FOR: The Director

SUBJECT: Attached Letter to Senator Jackson

This memorandum suggests action on the part of the DCI. Such requested action is contained in paragraph 3.

1. At a hearing on 12 January 1956 before the Military Applications Subcommittee of the Joint Committee on Atomic Energy, chaired by Senator Jackson, the Director promised that he would supply supplemental information covering the following points:

a. A summary of statements made by U.S. and Soviet Government officials regarding atomic explosions in the Soviet Union, and

b. An analysis of what the Soviet Union gained from the Geneva Conference on atomic energy, and whether they gained more than we did from them.

2. A report on (a) above was submitted to the Committee on 9 February 1956. The attached letter is in compliance with the request of (b) above. The report attached to the letter is a summary of a longer report which had been coordinated with the Atomic Energy Commission. OSI plans to send a copy of this correspondence and its attachments to the Atomic Energy Commission, although they did not feel it necessary to clear the summary reports, inasmuch as they do not depart in substance from the longer report which had been cleared with the Commission.

3. It is recommended that the Director release the attached letter to Senator Jackson, as Chairman of the Military Applications Subcommittee.

[Redacted Signature Box]

Norman S. Paul
Legislative Counsel

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Attachments

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ACTION SHEET

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DATE REC'D IN IC

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DESCRIPTION OF ATTACHED MATERIAL:

TYPE OF MATERIAL

Letter

DATED

FROM

Director of Central Intelligence

TO

Senator Jackson

SUBJECT

Transmission of Evaluation Report

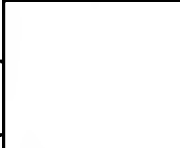






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DEADLINE DATE

FOLLOW-UP DATE

DIVISION ROUTING

TO	DATE	ACTION REQUIRED	INIT.	COMMENTS*
1. 	22 Jun	Review		
2. 	22 Jun	Review		
3. Chief. NED/SI		Review		
4. Exec/SI	27 June	Review		
5. AD/SI DAD/P/SI	27 June	Review, apprl and release		
6. IB/SI		Forwarding		

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* If comments bear a higher classification than the attached material, the security classification of this sheet be changed.

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